

What is claimed is:

1. A dry-etching apparatus, comprising:
 - a process chamber having a gas inlet, the gas inlet allowing a reactive gas into the process chamber;
 - a first electrode arranged at a predetermined location in the process chamber;
 - a second electrode in the process chamber spaced apart from and opposite to the first electrode, the second electrode having a plurality of lift pins received in a plurality of holes, and an insulating tape; and
 - a power source for applying voltages to the first and second electrodes.
2. The dry-etching apparatus of claim 1, wherein the process chamber is a vacuum chamber.
3. The dry-etching apparatus of claim 1, wherein the insulating tape is a vacuum tape.
4. The dry-etching apparatus of claim 1, wherein the insulating tape is located between the plurality of lift pins.
5. The dry-etching apparatus of claim 1, wherein the power source generates RF (radio frequency) power.
6. The dry-etching apparatus of claim 1, further comprising a DC (direct current) power source for applying DC voltages to the first and second electrodes.
7. A method for preventing an array substrate from being damaged due to an electrostatic force after a dry-etching process, comprising:
 - providing a dry-etching apparatus having:
 - a) a process chamber having a gas inlet, the gas inlet allowing a reactive gas into the process chamber;

Sub A.1

b) a first electrode arranged at a predetermined location in the process chamber;

c) a second electrode in the chamber spaced apart from and opposite to the first electrode, having an insulating tape thereon, a plurality of lift pins received in a plurality of holes, the insulating tape being arranged between the plurality of the lift pins; and

d) a power source for applying voltages to the first and second electrodes;

arranging the array substrate on the second electrode;

dry-etching the array substrate; and

separating the array substrate from the second electrode using the lift pins.

8. The method of claim 7, wherein the process chamber is a vacuum chamber.

9. The method of claim 7, wherein the insulating tape is a vacuum tape.

10. The method of claim 7, wherein the power source generates RF (radio frequency) power.

11. The method of claim 7, further comprising DC (direct current) power source for applying DC voltages to the first and second electrodes.

12. The method of claim 7, wherein the dry-etching process is a plasma dry-etching.

13. The method of claim 7, wherein the dry-etching process is an ion beam milling etching.

14. The method of claim 7, wherein the dry-etching process is a reactive ion etching.

Sub A2

15. A method for preventing an array substrate from being damaged due to an electrostatic force after a dry-etching process, comprising:

- providing a dry-etching apparatus having a first and a second electrodes in a process chamber, the second electrode having a plurality of holes and lift pins, and an insulating tape thereon;
- arranging the array substrate on the second electrode;
- dry-etching the array substrate; and
- separating the array substrate from the second electrode using the lift pins.

16. The method of claim 15, wherein the insulating tape is a vacuum tape.

Sub A3

17. A method of processing a substrate for a liquid crystal display (LCD) device, the method comprising:

- providing an electrode plate;
- positioning a substrate at a predetermined distance from the electrode plate to obtain an intermediate structure;
- processing the intermediate structure; and
- removing the substrate from the electrode plate.

18. The method of claim 17, wherein the substrate is positioned at the predetermined distance from the electrode plate sufficient enough to minimize electrostatic attraction therebetween.

19. The method of claim 17, wherein the substrate is positioned at the predetermined distance from the electrode plate by placing an intermediate material between the substrate and the electrode plate.

Sub A4

20. A method of processing a substrate for a liquid crystal display (LCD) device, the method comprising:

providing an electrode;
providing an intermediate material on the electrode;
providing a substrate on the intermediate material of the electrode to obtain an intermediate structure;
processing the intermediate structure; and
removing the substrate from the electrode.

21. The method of claim 20, wherein the removing step is achieved by a plurality of pins formed on the electrode to push the substrate away from the electrode, while the intermediate material provides electrostatic protection between the substrate and the electrode.

22. An apparatus for processing a substrate for a liquid crystal display (LCD) device, the apparatus comprising:

an electrode having a plurality pins; and
an intermediate material on the electrode,
the intermediate material receiving a substrate and providing electrostatic protection between the substrate and the electrode, as the substrate is detached from the electrode using the pins.

23. The apparatus of claim 22, wherein the intermediate material is located on the electrode at a predetermined position between the pins.